

## Claims

- [1] A rotor for generating vortex water flow, comprising:  
a plurality of first blades extended in a radial direction from a rotational axis thereof; and  
a plurality of second blades extended in the radial direction from the rotational axis, and disposed at positions different from positions of the first blades in a direction of the rotational axis.
- [2] The rotor as claimed in claim 1, wherein the first blades and the second blades have widths different from each other in a circumferential direction around the rotational axis.
- [3] The rotor as claimed in claim 2, wherein the first blades and the second blades are so disposed as to be overlapped with each other.
- [4] The rotor as claimed in claim 1, wherein the first blades and the second blades are disposed at positions different from each other in a circumferential direction around the rotational axis.
- [5] The rotor as claimed in claim 4, wherein the first blades and the second blades are partially overlapped with each other.
- [6] The rotor as claimed in claim 4, wherein the first blades and the second blades are distanced from each other in the circumferential direction.
- [7] The rotor as claimed in claim 6, wherein the first blades and the second blades are so disposed as to be distanced equally from each other in the circumferential direction.
- [8] The rotor as claimed in claim 4, further comprising at least one of protrusion attached on outer surfaces of the first blades and/or second blades.
- [9] The rotor as claimed in claim 8, wherein the protrusion is so formed as to have width varying in the circumferential direction.
- [10] The rotor as claimed in claim 9, wherein the protrusion is so formed as to have streamlined width in the circumferential direction.
- [11] The rotor as claimed in claim 10, wherein the protrusion is so formed as to have a rear shape curved rearward in the circumferential direction.
- [12] The rotor as claimed in claim 9, wherein the protrusion is so formed as to have a horizontal cross section of circle shape substantially.
- [13] The rotor as claimed in claim 7, wherein a plurality of protrusions are respectively attached between the first blades and the second blades, and sizes of the protrusions become greater gradually in the radial direction.
- [14] The rotor as claimed in claim 4, wherein the first blades and the second blades have widths same with each other in the circumferential direction.

- [15] The rotor as claimed in claim 4, wherein the first blades and the second blades are disposed alternately in the circumferential direction.
- [16] The rotor as claimed in claim 1, wherein the first blades and the second blades are disposed so that at least a part thereof are overlapped with each other in the rotational axis direction and are disposed so as to be distanced from each other in a circumferential direction around the rotational axis, and at least one of protrusion is disposed between the first blades and the second blades.
- [17] The rotor as claimed in claim 16, wherein the protrusion is so formed as to have width varying in the circumferential direction.
- [18] The rotor as claimed in claim 17, wherein the protrusion is so formed as to have streamlined width in the circumferential direction.
- [19] The rotor as claimed in claim 18, wherein the protrusion is so formed as to have a rear shape curved rearward in the circumferential direction.
- [20] The rotor as claimed in claim 17, wherein the protrusion is so formed as to have a horizontal cross section of circle shape substantially.
- [21] The rotor as claimed in claim 16, wherein a plurality of protrusions are respectively attached between the first blades and the second blades, and sizes of the protrusions become greater gradually in the radial direction.
- [22] The rotor as claimed in claim 1, further comprising:  
a first ring formed integrally with the first blades and disposed coaxially with the rotational axis; and  
a second ring formed integrally with the second blades and disposed coaxially with the rotational axis.
- [23] The rotor as claimed in claim 22, wherein the first ring and the second ring have radiuses different from each other.
- [24] The rotor as claimed in claim 1, further comprising a first rotor equipped with the first blades, and a second rotor equipped with the second blades;  
wherein the first rotor and the second rotor are attached to each other.
- [25] The rotor as claimed in claim 1, further comprising a first rotor equipped with the first blades, and a second rotor equipped with the second blades;  
wherein the first rotor and the second rotor are formed in a body.
- [26] A filtering apparatus comprising:  
a barrel having a water inflow port, a processed water discharge port, and a condensed water discharge port;  
at least one of rotor disposed in the barrel and having a construction depicted in one of claims 1 through 25; and  
at least one of filter tray disposed alternately with the rotors in the barrel.

- [27]        The filtering apparatus as claimed in claim 26, wherein the filter tray is fixed in the barrel.
- [28]        The filtering apparatus as claimed in claim 26, wherein the filter tray has at least one of water passage port so formed as to penetrate a plane thereof.
- [29]        The filtering apparatus as claimed in claim 28, wherein the filter tray includes a supporting plate having a disk shape, a drain cloth attached on both surface of the supporting plate, and a separation membrane attached to an outer surface of the drain cloth.
- [30]        The filtering apparatus as claimed in claim 29, wherein the drain cloth and the separation membrane are adhered onto the supporting plate with thermosetting adhesive.